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Journal of the Society of Arts.

FRIDAY, FEBRUARY 28, 1868.

Announcements by the Council.

Artisans' Reports on the Paris Exhibition.

The Reports of the Artisans selected by the Council to visit the Paris Exhibition are now ready, and may be had of the Society's publishers, Messrs. Bell and Daldy, York-street, Covent-garden. One volume; demy 8vo., 732 pages, price 2s. 6d. in boards, or 3s. 6d. in cloth. The volume contains reports, by upwards of eighty artisans, upon the principal industries represented in the Exhibition, as well as special reports on the condition and habits of the French working classes.

Ordinary Meetings.

Wednesday evenings, at Eight o'Clock:—

March 4.—"A Workman's Views on Technical Education." By Mr. John Randall, one of the Artisan-Reporters on the Paris Exhibition.

March 11.—"On Courts of Arbitration, and the Principles of Co-operation, as means of bringing into Harmonious Action the Interests of Capital and Labour." By Thomas Beggs, Esq.

March 18.—"On Railways and their Management." By Robert F. Fairlie, Esq.

March 25.—"On Horse as an Article of Food." By A. S. Bicknell, Esq.

Cantor Lectures.

The last course for the present Session will consist of four lectures, "On Chloride of Sodium, the products obtained from it, and their applications to Arts and Manufactures," to be delivered by Dr. F. Crace Calvert, F.R.S., on Friday evenings, commencing on the 13th March.

The lectures commence each evening at Eight o'clock, and are open to members, each of whom has the privilege of introducing two friends to each lecture. Tickets for this purpose will be forwarded to each member.

Institutions.

The following Institution has been received into Union since the last announcement:—

Handsworth Working Men's Club.

Subscriptions.

The Christmas subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.," and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of the Society.

Committee on Technical Education.

In compliance with the resolution passed at the Conference held on the 23rd and 24th of January, the Council have appointed a standing Committee, "to take such steps as may give effect to the resolutions passed at the Conference, to support all such well-advised schemes for Technical Education as may be brought before it, to send such deputations to the Government as may seem expedient, and to re-assemble the Conference when desirable," and the following gentlemen have consented to serve upon it:—

Samuel Andrews (Auditor Society of Arts).
T. C. Archer (Edinburgh Museum of Science and Art).
John Avery (Mayor of Birmingham).
A. S. Ayrton, M.P.
John Barber (Mayor of Nottingham).
John Marsland Bennett (Manchester Chamber of Commerce).
Professor Robert Bentley (King's College, London, Member of Council of the Society of Arts).
The Hon. and Rev. S. Best.
D. Roberton Blaine (Member of Council of the Society of Arts).
Antonio Brady (Member of Council of the Society of Arts).
Dr. F. Crace Calvert, F.R.S.
Edwin Chadwick, C.B.
Harry Chester (Vice-President of the Society of Arts).
J. J. Colman (Mayor of Norwich).
Robert Coningsby.
Thomas Connolly.
Sir Daniel Cooper, Bart. (Member of Council of the Society of Arts).
J. T. Dexter (Public Museums and Free Libraries Association).
George Dixon, M.P.
A. Field (Birmingham Chamber of Commerce)
George Godwin, F.R.S.
S. R. Graves, M.P.
Thomas Gray (Board of Trade).
George Griffith, M.A. (British Association).
John Gulson (Mayor of Coventry).
George Harrison (Edinburgh Chamber of Commerce).
William Hawes, F.G.S. (Chairman of Council of the Society of Arts).
The Hon. Auberon Herbert.
Robert Hogg, LL.D.
C. Wren Hoskyns, (Vice-President of the Society of Arts).
Robert Hunt, F.R.S. (Royal School of Mines).
Professor Huxley, F.R.S.
A. H. Layard, M.P.
Professor Fleeming Jenkin, F.R.S. (University Coll.).
The Rev. W. C. Lake.
W. W. Lee (Mayor of Wakefield).
Professor Leone Levi (King's College).
The Earl of Lichfield.
Prof. G. D. Liveing (Cambridge University).
F. N. Menzies (Highland Agricultural Society).
Lord Robert Montagu, M.P.
The Right Hon. Sir John S. Pakington, Bart., M.P., (Vice-President of the Society of Arts.)
Dr. Playfair, F.R.S.
Wyndham S. Portal.
Hodgson Pratt.
Dr. David S. Price.
Richard Redgrave, R.A.
Thomas Roe, jun. (Mayor of Derby.
Prof. J. E. Thorold Rogers (Oxford University).
The Earl Russell.
J. Scott Russell, F.R.S.
Rear-Admiral A. P. Ryder.
B. Samuelson, M.P.
Trelawny Saunders.
P. L. Simmonds.
Alderman and Sheriff D. H. Stone (Member of Council of the Society of Arts).
Dr. John Storrar.
The Rev. Dr. Temple (Rugby School).
Seymour Teulon (Treasurer of the Society of Arts).
Captain Henry Toynbee (Board of Trade).
Thomas Twining (Vice-President of the Society of Arts).
Richard Whiteing.
G. F. Wilson, F.R.S.
J. S. Wright (Birmingham Chamber of Commerce).
M. Digby Wyatt.

John Yeats, LL.D. (Middle School, Peckham).
James Young (Bathgate Chemical Works).
The Archbishop of York (Vice-President of the Society of Arts).

The Committee held its first meeting on Wednesday, the 26th February. There were present:—W. Hawes, Esq., Chairman of the Council, in the chair; A. S. Ayrton, M.P.; E. Chadwick, C.B.; H. Chester; R. Coningsby; T. Connolly; J. T. Dexter; Geo. Dixon, M.P.; Geo. Godwin, F.R.S.; S. Graves, M.P.; Thomas Gray; The Hon. Auberon Herbert; Dr. Hogg; Professor Fleeming Jenkin, F.R.S.; Rev. W. C. Lake; Professor Leone Levi; Wyndham Portal; Hodgson Pratt; Dr. David S. Price; J. Scott Russell, F.R.S.; Admiral Ryder; B. Samuelson, M.P.; Trelawny Saunders; Dr. Storrar; S. Teulon; Capt. Toynbee; G. F. Wilson, F.R.S.; M. Digby Wyatt; J. Yeats, LL.D.; the Archbishop of York.

The Committee resolved:—

"That a sub-committee be appointed to prepare a scheme of Technical Education calculated to promote the advancement of the Arts, Manufactures, and Commerce of this country; the sub-committee to consist of the following:—R. Coningsby; T. Connolly; W. Hawes; The Hon. Auberon Herbert; Professor Huxley, F.R.S.; Professor Fleeming Jenkin, F.R.S.; Professor Leone Levi; J. Scott Russell, F.R.S.; Admiral Ryder; B. Samuelson, M.P.; Dr. Storrar; and the Archbishop of York; with power to add to their number."

TWELFTH ORDINARY MEETING.

Wednesday, February 26th, 1868; W. S. FITZWILLIAM, Esq., late Member of the Supreme Legislative Council of India, and subsequently Colonel W. H. SYKES, M.P., F.R.S., presided.

The following candidates were proposed for election as members of the Society:—

Lewis, Thomas Hayter, 9, John-street, Adelphi, W.C.
Hollest, W., Leigh-house, Farnham.
Thomas, Wesley Henry, 6, Water-lane, E.C.

The following candidates were balloted for, and duly elected members of the Society:—

Dickinson, John, 12, Haymarket, S.W.
Griffith, George, Woodside, Harrow.
Mathew, E. W., Wern, Carnarvon.
Wilkins, John, 48, Hungerford-road, N., and Took's-court, E.C.

The Paper read was—

ON A DAILY MAIL ROUTE TO INDIA.

BY HYDE CLARKE, ESQ., COTTON COMMISSIONER IN TURKEY.

The desire of improving the communications between England and India has given rise to many projects, and occupied the time of many distinguished Englishmen. Two names particularly stand forward, that of General Chesney, as the pioneer of the Euphrates route, and that of Lieut. Waghorn, in connection with the Egyptian route. On the latter, English enterprise has been particularly successful, for by steam navigation and by railways, it has been brought to such a stage of advancement that the French have been stimulated to co-operation, and have engaged in the great work of the Suez Canal.

Local circumstances have hitherto given the preference to Egypt over the Euphrates, and this latter route remains unused, notwithstanding surveys, agitation, and a steam expedition on the rivers. Events have, however, been moving in its favour. Railways have been creeping in from the interior to Bombay, steamers have been run from Bombay to Bussorah, and communicate with Bagdad, while from London railways have advanced to the Lower Danube, and are now promised beyond it. If, therefore, the intervals can be bridged over, we get, step by step, continuous railway communications from London, with an intervening steamboat transit, which will in itself bring about the day when the locomotive will run from the opposite shore of the Continent to Calcutta, and even the frontier of China.

The plans for accomplishing communication by the Euphrates Valley, have been either by steam navigation, or by railway, steam navigation being limited to the river, railway transit being proposed throughout from London, or simply to fill up the Valley route. Thus there are various claims of priority. General Chesney is the parent both of steam and railway routes from the Euphrates, having commenced his labours in 1830. The progress of railways in Europe led to projects of railways for through communication. In 1842 Mr. Wm. Pare, a gentleman of great activity in the railway world, published a plan for a Calais, Constantinople, and Calcutta Railway. Mr. Alexander F. Campbell, formerly of the Royal Engineers, proposed to the East India Company, a system of railways on the wide gauge to India, under dates 6th of September, 1843, 25th March, 1845, and 25th April, 1845. His map was published by Mr. Wyld, in 1851. Mr. John Wright, in 1849, took up the same subject. The title of his work was "Christianity and Commerce, the Natural Results of the Geographical Progression of Railways." Dr. James Bowen Thompson, a zealous promoter of the Euphrates route, and who died at Constantinople while advocating it, exhibited in the Great Exhibition of 1851, a plan for a railway from London to Calcutta.

The chief competitors for the through line of railway by the Euphrates have, however, been Mr. W. P. Andrew and Sir R. M. Stephenson. Each claims priority. Sir R. M. Stephenson appears to have paid cursory attention to the subject in 1850 and 1851, but he adopted the alternative project of a Persian route. In 1859, on the ground of ill-health, he abandoned the agitation. Mr. Andrew, in conjunction with the Euphrates pioneers, has continuously prosecuted the Euphrates Valley Railway, and has casually advocated a through line. Credit must be given to Sir R. M. Stephenson for the part he took in these discussions, and which created at the time great interest in the public press.

For practical labours the public is greatly indebted to General Chesney, and next to him to Captain Lynch, R.N., who has kept the undertaking alive; also to Mr. W. F. Ainsworth, General Estcourt, Lieutenant Murphy, and Captain Campbell, I.M. Of late years the prominent promoter of the Euphrates route has been Mr. Andrew, who, in 1857, was the organ of a powerful deputation to Lord Palmerston, who has been the representative of the Euphrates Valley Railway Company, and who continues to urge the subject on the Imperial and Indian Governments, and on the public.

The time has now come when the agitation must assume greater proportions than a mere Euphrates Valley route; the economical conditions have greatly altered. We are no longer limited to a consideration of the steam transit between Trieste and Brindisi and Scanderoon, for we may hope confidently for a railway to Constantinople; and if we take up the matter seriously, we may more easily obtain a through line from Constantinople to Bussorah than a half-way line from the Mediterranean to that port. The leading fact is that the political circumstances are altogether altered from what they were ten years ago. India has come home to us at length, for its vast development has produced a great impression on the public mind here. We are no longer afraid of the Suez Canal, but the Egyptian route is not now felt to be so reliable nor is it so much in favour. Telegraphic movements have become the precursors of railway routes; and the telegraph has made the central line by the Euphrates familiar to us. It would have familiarised us with the Persian route, but the downward bearing of Russia equally towards Turkestan, India, Persia, and Turkey, has produced a powerful sensation on the minds of England and India, nor have European events been without their influence. We feel we must have more resources, more than one expedient, safety for the present, security under future contingencies.

Hence the middle route to India from many causes is brought prominently before us. It is not a rival to any line; it is certainly not one to the Suez Canal now, any more than it was in 1857, when M. Lesseps said, "I have personally maintained, and I shall continue to maintain, that the Euphrates Railway will be a benefaction to countries now disinherited." The Egyptian route will not be injured and abandoned on the opening of the middle route. It has its own peculiar advantages, but so has the middle route, which will do even more than the Egyptian route in the opening up of little frequented countries, and in the impulse it will give to the commerce of the world.

The middle route has this characteristic, that, beyond even the Suez Canal, it can claim to be a European underdertaking. It must greatly benefit this country; but it will benefit directly or indirectly every country of Europe. In the silk trade alone it will confer direct advantage on France and Italy, in opening up Asia Minor, Mesopotamia, and Persia, and it will carry to the sealed up East the manufactures of France, Belgium, Holland, Switzerland, Prussia, Saxony, and Austria; for if we talk of a railway from London to Asia, it is no less a railway likewise from Paris, Lyons, Rouen, Mulhausen, Brussels, Liège, Verviers, Utrecht, Geneva, Berlin, Elberfeld, Nuremberg, Augsburg, Leipsic, Vienna, and Pesth. It will open new markets for every manufacturing town in Germany, and for their growing trade with the East.

It will give to them and to us a daily mail for all India, and a proportionate acceleration for China, Japan, Java, Sumatra, Cochin China, the Philippines, and Australia. The French have mails to China, and their growing possessions in Cambodia; the Hollanders to the Netherlands East Indies; and Spain to Manilla. Thus, in one way or another, the nations of Europe have a great stake in the development of this route; and it is to be hoped, as all will profit on its completion, so all will assist in its realisation. Do what we will for our own good, we must benefit others; we must open the way for others, as we have done in Egypt and elsewhere. Let us, therefore, invite and welcome the co-operation of others.

Of the lines of railway from London and the European capitals, constituting the great railway system, it is unnecessary to say more than that they now reach Basiash on the Danube, near Belgrade, on the Turkish and Servian frontier. For the junctions with Constantinople, a route of about 500 miles, which will pass through Adrianople, has been granted by the Sublime Porte to a combination of English, Belgian, and Hungarian capitalists, represented by Messrs. Vander Elst and Co.

In the condition of Turkish finance there are difficulties to be encountered, which may cause modifications of arrangements and delays, but it may now be felt assured that this line will be completed. The Ottoman Government is resolute on carrying out its railway system, and will find some resources. This line is, however, a political and commercial necessity for the newly-restored state of Hungary, and very great efforts will be made by that patriotic people to accomplish their purpose, and secure their frontiers against their several enemies. Austria is not altogether dead to enterprize, and her government and capitalists will give their assistance. This railway is represented at Constantinople by two distinguished men, Count Zichy and General Eber. According to the latest official advices the arrangements with the government have been complete and the works will be begun at an early date on four points. The chief engineering works are in the passage of the Balkan. The line passes through countries having considerable resources, which will be further developed by a railway, and if the financial measures be honestly and rationally conducted, the line will in a few years be remunerative. Until that period the Ottoman Government will be able to meet the guarantee through the increase of its own revenues, resulting from the expenditure of capital on the works and the working of the railway. A bridge across the Bosphorus, between the Rumeli Hissar and Anadoli Hissar, or Castles of Europe and Asia, has been projected by Mr. M'Clean, late President of the Institution of Civil Engineers; and a plan was also exhibited at the Paris Exhibition in 1867, and illustrated in the *Engineer*, of February 14th, by Herr Rüppert, a distinguished Austrian engineer.

The line from Constantinople, and its Asiatic suburb Scutari, to Bagdad and Bussorah, of 1,400 or 1,500 miles, is granted by the Ottoman Porte to a company represented by Mr. L. Greig and the Hon. Randolph Stewart, Messrs. Sharpe, Stewart, and Co., and Baron Winspeare. The route has to be decided on survey, for which two years are granted, and is roughly traced by Izmid, Kutahiah, Afioon Kara Hissar, Koniah, Ak Serai, Yenisheher, Kaisarieh, Aleppo, the Euphrates Valley, Bagdad, and Bussorah, with a branch to Skanderoon, Seleucia, or Suedia.

The guarantee of the Government is limited to five per cent. on £12,000 a kilomètre, or £20,000 a mile. The special funds set apart are the postal subsidies and transport of mails, the Indian telegraph receipts, and one per cent. transit duties. At the present moment the guarantee in its simple state will not allow of capital being raised, nor do the *concessionnaires* propose to resort to any of the accustomed modes of financing. Having got what may be called the collateral guarantee of the Ottoman Government,—not an absolute guarantee of five per cent., but a guarantee to make up the revenue of the company to that rate in case of deficiency,—it is the business of the *concessionnaires* to make effective the revenues appropriated to them.

The first of these consists of the postal subsidies to be negotiated with the several Governments. These Governments are our own Indian Government, that of the Netherlands Indies, those of Australia, that of Persia, Muskat, England, France, Holland, Belgium, North Germany, Switzerland, Italy, Saxony, and Austria.

The second consists of telegraph business and subsidies from several Governments and commercial communities.

The third consists of the transit duties.

The fourth consists of the revenues of the railway itself, local passengers, through traffic, the transport of troops, and the carriage of goods.

In aid of all these comes the general guarantee of the Ottoman Government.

The question, therefore, is whether, with all these resources, and such further aid as may be obtained from friendly quarters, the funds can be provided; and this presents no insuperable difficulties, if there be but a real conviction on the part of those interested, of the true value of the undertaking, and the urgency of its execution.

From Bussorah mail steamers run to Bombay, but these only afford accommodation to the local trade between India, Bussorah, and Bagdad, and yet this is sufficient to justify the Government of India in maintaining this service. It may be conceived that the Government can afford a larger subsidy to carry letters further, and to open up the trade with the Mediterranean and with Europe. If Bagdad and Bussorah are now of such importance to India for local purposes, they will become still more so when their ports and markets are enriched by the advantages of railway communication.

Bombay has opened or has in progress lines of railway, which connect it with the great Indian system, and give it access to Calcutta, Madras, and all the main stations. The traveller from Europe would, on reaching Bombay, proceed at once to railway stations in the interior, for which a voyage to Calcutta and Madras would entail circuitous travelling.

Such is the present state of the route from London to Calcutta.

The sources of income on which the Constantinople and Bussorah Company have to rely have already been enumerated. It may be useful to make some estimate of them.

The railway, it may be assumed, passing in many parts through an undeveloped country, cannot for a long time pay of itself, nor will the through traffic be sufficiently large to yield a dividend. Under these circumstances, the net income may be taken during its early years at 2 per cent. The capital may be assumed at £20,000,000; it may by economy be less; it may by delays and misfortunes become larger. Two per cent. per annum on £20,000,000, gives £400,000.

The Indian telegraph already yields a profit to the Ottoman Government. It may be taken, on the completion of the line, at £100,000.

The transit duties may be taken on £5,000,000, imports and exports, or £100,000 per annum. The trade to South Persia would follow this route; also that to Muskat, the Mekran, and the Arab ports on both shores of the Persian Gulf. The transit duties would be levied on valuable articles exported from England, France, &c., to the countries named, to India, China, Japan, the Archipelago, Manilla, and many eastern regions, and on imports from them. Thus we have—

Traffic	£400,000
Telegraph	100,000
Transit duties	100,000
	£600,000

The question is what England and India can afford to give as a postal subsidy, leaving the other mails as matters of subsequent arrangement; the French, Spanish, Netherlands, Belgian, North German, Saxon, Swiss, Italian, Austrian, and United States mails.

Can our governments afford to risk £200,000 in subsidies to secure the great advantages dependent on this undertaking? The first help to answering this is, that a great increase of postal revenue will result from the acceleration and more frequent transit of the mail. If this be taken at £100,000, it leaves only £100,000 as the amount of effective subsidy, in substitution of other subsidies, to be divided between England and India, to be diminished by other mail receipts, and to be ultimately extinguished by the development of the railway system, and the augmentation of the transit duties.

Thus the effective liability of the home treasury is reduced to a casual £50,000 a year, or some comparatively small amount. For this our empire will obtain great political advantages, a greater assurance of European peace, a further guarantee against invasion or revolt in India, an immense commercial development, readier correspondence with the increasing markets of the eastern world, a speedier and more convenient transit for our merchants, officials, civil and military, and soldiers to India and the adjoining regions.

To secure these advantages more effectually, the railway must be constructed as cheaply as possible—that is, for ready money, and not for Lloyd's bonds; it must not pass into the hands of financers; there must be wholesome supervision over the contracts, construction, and expenditure; there must be a low capital cost and cheap working, so that our commercial and political travellers may have to pay only reasonable fares. To effect all this the line must be assimilated to the Indian system; it must not be financed on the Turkish guarantee; but it must have a solid English or European guarantee of 4 per cent., in the shape of a postal subsidy, in principle assimilated to that of the Peninsular and Oriental Company, securing not direct political but direct postal advantages to our Government, making the rate of its contribution dependent on the earnings of the line, and ultimately assuring either our direct participation in the profits, or our indirect benefit in the reduction of charges.

Will France, will Austria, will Hungary participate in this undertaking, from which each is to derive so much? Will France neglect this opportunity for upholding her position in the eyes of Europe, one still more honourable to her than even the patronage of the Suez canal? The question is whether these countries will leave the whole share of the prosecution of these works to the English. This appears inconsistent with the attitude of France. Originally assisted by English capital and English experience her railways were begun, but they were completed by French industry, and she has since extended her railway operations outside to Austria, Italy, and Spain. A nation which has never loved to be left behind—which has followed us to India, to China, to Egypt—will not leave to us the sole conduct of railways in Turkey, or the sole development of Persia, a country in which she has so long sought to acquire trade and influence. French capitalists have tried singly, or in conjunction with English capitalists, to carry out the Adrianople railway; and they will claim their due share in its companion enterprise, which is to connect Paris and Constantinople with the Indian Seas.

In fact, this great enterprise is not one calculated to excite European jealousies, but to contribute to European union. It will be a new bond among the cabinets of Europe, a common tributary to the industry and commerce of each nation.

Such, it is to be hoped, will be the result produced, and, as the undertaking is represented by an able and energetic man of great public spirit, the Hon. Captain Stewart, there is every prospect of its claims being efficiently advocated. Captain Stewart has addressed a memorandum to the Earl of Derby on the claims of the undertaking, which shows very forcibly the importance to national interests of its immediate completion and of liberal support being afforded to it by Her Majesty's Government.

The constructive questions of a line as yet only partially or roughly surveyed cannot be fully dealt with, but enough is known to declare the practicability of the undertaking.

With regard to the plan, the geographical features of Asia Minor limit the course to be chosen both on the north and south of that peninsula. Even on starting from Constantinople or Scutari, after coasting the Gulf of Izmid to the town of that name, a difficult country has to be approached. This has, however, been in part surveyed, and in part examined by English engineers, while the whole line from Scutari to Izmid and Eski Sheher has long since been carefully planned under the direction of the former *concessionnaire*, Mr. James Landon. From Izmid there are two routes across the central plateaux, one by Hajgi Hamzah and Boli, the other proceeding by Kutahiah, and so by Afioon Kara Hissar, Koniah, Ak Serai, Yenisheher, Kaisarieh, by the valley of the Halys and plains of Nigdeh, or whatever may be found the best route to the Koolak Boghazi, the Syrian or Cilician Gates, the great pass through Taurus.

The passage of the Koolak Boghazi will be the great work on the line, and it is one which will require the most care and expense. Since the time when it was first considered, the execution of the railway passages over the Alps and the Ghauts have materially contributed to lessen the responsibility of such an enterprise.

Questions then arise as to the connection of the line with the Euphrates, and as to the direction of the branch from that line to the Mediterranean shore, so as to make the Euphrates Valley line an alternative route, in case of need, either by through railway communication with Europe, or by steamer. The routes surveyed for General Chesney's Company, under the direction of Sir John Macneill, have been from Seleucia or Suedia to Aleppo.

As this makes needful the construction of an expensive harbour, and the Ottoman Government prefers a connection between the fine port of Skanderoon or Alexandretta and Aleppo, although across a heavy pass. They therefore caused it to be surveyed, at my request, by Col. Messoud Bey, who has reported fully in its favour.

From Aleppo onwards to Bagdad and Bussorah the route presents the usual features of a line in a great southern river valley.

No sound estimate can be made of the expense, as the distance even is not known. An estimate of 100 miles for the Scutari and Izmid concessionnaire gives £8,000 to £10,000 per mile, but the country beyond is heavier. The estimate of the Euphrates Valley section is given at the same rates, for 850 miles, as those of the Scutari and Izmid. Taking these as 100 miles and 850 miles, or 950 miles together, and the total length as 1,500 miles, although it may prove only 1,400, we have a remainder of 550 miles, which, if we take at £15,000, would cost £8,250,000.

Estimates:—

	£	£	£
Scutari and Izmid...	800,000	1,000,000	1,000,000
Izmid and Aleppo...	8,250,000	8,250,000	11,000,000
Euphrates Valley...	6,800,000	8,500,000	8,500,000
Totals ..... £	15,850,000	17,750,000	20,500,000

In the last estimate the cost of the Asia Minor heavy section is taken at £20,000 a mile, and the others at £10,000; £12,000 a mile would bring the total cost up to £22,000,000. The total cost appears to be within the limits of £16,000,000 and £25,000,000. The smaller sum we can hardly, under all contingencies, hope to stop at, the larger we may try to avoid, and the capital may be taken at £20,000,000.

The line can be begun at several points simultaneously, namely, at Skutari, Izmid, the plain below the Koolak Boghazi, Skanderoon, Aleppo, Bagdad, and Bussorah; all very heavy works in the interior of Asia Minor can be begun early or together. A great advantage of the geographical situation is that the line touches the sea at its ends and middle, affording convenient places for landing plant, rails, and engines, thereby facilitating the works. In case of need, some further point on the river may be used as a point for operations.

The question of labour, as to which anxiety was formerly expressed, has been solved by the operation of the railway companies in Turkey, which have organised labour on the English system. The lines existing in Turkey are the Danube and Black Sea, or Kustenjeh, 40 miles; the Varna and Ruschuk, 140; the Ottoman, Smyrna, and Aidin, 82; and the Smyrna and Cassab, and Bournabat branch, 62; total 250. On these works have been trained a large body of labourers of all kinds, and a number of managers, sub-contractors, and foremen. So far as staff is concerned, a thousand miles of railway can be put in hand, and labourers can be found. The old hands will serve to train labourers in the new districts, as yet untried, and in case of any refractory or unwilling population, it will be replaced by imported labour. There is no real ground to expect refractory Arabs, or that any population will not work for high wages. Besides local labour, the northern districts will be supplied by Armenians and Croats, the middle districts by Armenians and Greeks from Candia, Rhodes, and other islands, and the southern portion, besides local and imported labour from accustomed supplies, will most likely receive labourers from refractory tribes or from India. The earthworks and masonry will be executed by native labour as well as in Europe, and the line will be as well laid.

Attacks from Arab tribes are not to be feared by bodies of stout and organized labourers, for whom military aid can be made available, but in all likelihood in the most disturbed districts the labourers will work unarmed. Imagination is one thing, but the practical experience of railway works is another. Brigands and outlaws there will be, but most will be employed as labourers, teamsters, and woodmen, the most crafty as gangers, petty contractors, and dealers; the most lazy as loafers and beggars, and they will little contribute to the annals of murder and robbery. The chiefs of predatory tribes will be engaged in numerous speculations in milk, beasts of burden, cutting timber and sleepers, and turning to their own profit the labour of every man and woman of their tribes.

The progress of the works will be regulated by the same circumstances as at home, the supply of money, the supply of labour on economical conditions, the supply of timber and other materials, and the skill in battling with administrative and constructive difficulties.

From the Ottoman Government every assistance is to be expected. The government and its officers have not interposed vexatious administrative delays in railway construction, but have acted on the principle of encouraging these undertakings. The Sultan has a settled and earnest desire to promote railways, and is seconded by his ministers. The Council of Public Works is directed by French and English engineers. The commissioners appointed to supervise the lines have been chiefly Europeans, and instead of exercising an interference with the managers and engineers, they have confined themselves to co-operating with them and with the local authorities in promoting the execution of the works.

Money being provided, there is no more difficulty in carrying on railway works in Turkey than in any country in the world, indeed it may be said less than in many countries.

With regard to the advantages of completing the railway communication, the direct advantages are so great that it is not necessary to dwell on the political advantages. Everything that improves and insures our commercial correspondence with India must give us political advantages; everything that contributes to the material well being of Europe is a greater security from danger, and further guarantee of peace. Thus the European junction with Constantinople will throw open to enterprize 500 miles of country in Roumelia of great resources, hitherto of little profit to the community, and by so doing increase the stability of Turkey and the well-being of Austria and Hungary.

The Asia Minor portion of the Constantinople and Bussorah Railway will do the same service for that great peninsula; it will connect the great cities on the caravan routes, and open for them outlets to the sea, now only to obtained by long and troublesome canal transport down the river valleys to Smyrna, or across the mountain ranges to Adalia and the ports of Tarsus. The productive countries of the interior are now so pent up that only their richer produce of opium, silk, and cotton can get to the sea, but the railway reaching the midland districts at a point not more distant than Manchester or York from London, will allow bulky objects to be shipped, for which beasts of burden are now wanting. Thus a development of traffic will take place beyond the immediate region of the railway; caravan traffic will be intercepted or become tributary, while new outlets will be fostered. The interchange of commodities between these districts will be carried on upon a larger scale, and the westerly immigration of Armenians, Turkomans, and Koords seeking industrial employment will be increased, and the nomad tribes be further arrested.

When the western regions are unsettled the nomad tribes set further towards the west, but as cultivation extends the nomads are driven back, or become cultivators or townsmen. Thus a railway intersecting Asia Minor in the course proposed would exercise a material influence on the well-being of the eastern countries of the peninsula, assisting the government in its efforts to regulate the turbulent tribes. The same remarks apply in a great degree to the Euphrates section, and on a course of 1,500 miles will be constituted as it were a telegraphic current for the propagation of civilisation, in what once were the empire states of the eastern world. Pontus, Armenia, Babylon, Media, and Persia would be restored, if not to their historic power, at all events to rivalry with their ancient prosperity.

If in Asia Minor, which has on the line traversed some evidences of its former well-doing, this influence would be great, still more would it be exercised on the neglected valleys of the Euphrates and the Tigris. The immediate effect produced by a railway in developing a backward country is more particularly due to the nature of the railway itself. It is not on an increase of population, as supposed, that these results are dependent, though an increase of population does take place, but on an increase of the absolute produce, and on the realisation of that produce for export. To a country where the largest iron-worker is the shoeing-smith and the gipsy, and where all implements of labour and manufacture are wooden and rude, the railway supplies metal, tools, implements, and machines. Thus, the produce of the field and the forest is augmented. What it does in the distribution of capital is still more. The agriculturist, always in debt to the trader, and in bondage for small sums to the chandlers' shop keeper, is visited by the larger native capitalist of the towns, and gets greater advances on more favourable terms; and the same agency sets up mills and factories. If there is a demand for produce for the European market, opium, cotton, or madder, the English merchant comes into competition with the native, and his agents make advances more liberally, and at easier rates. It is by throwing open the interior easily and safely to the native and European merchant, that capital, intelligence, and enterprise are brought to the doors of each cultivator. It is thus that the provinces of Smyrna, Magnesia, and Aidin have already largely benefited from railway communication. The Government, too, becomes stronger, and has better means of coping with gang robberies, and restraining the vexations of nomadic and predatory tribes.

It is more particularly by its peculiar mode of transport that a railway relieves a country. What is taking place in the Abyssinian expedition is the key to the commercial conditions affecting remote districts in Asia and South America. The mule, laden with forage at Annesley Bay, eats most of his forage on the road to Senafe and on his return, and leaves but a small reserve at Senafe. So is it with the transport of grain; even the hardy camel must be to some extent fed, and so must his attendants, and thus, after a certain distance, his own load will be consumed. Thus, in all these countries, transport absorbs food for a large number of camels, mules, horses, buffalos, and oxen, and the men attendant upon them, while the consumption of cereals consequent upon railway transport, is small. Agriculture therefore gains, on the introduction of a railway, not only this economy of food, but the liberation of men and beasts for the further cultivation of produce. If the produce remained the same, at Konieh, for instance, the exportable produce would be greater, but the fact is the total produce would be greater had it railway transit. In corn alone, to be shipped at Constantinople, it is acknowledged by all who know that the increase of production in the interior would be enormous. The railway, therefore, tends in every way to increase the existing traffic and to create new resources.

In the single article of cotton, too, a great augmentation would take place on the line of fifteen hundred miles; if in the spring, the agents of a few European houses could readily and speedily traverse the country to arrange advances for sowing, and if in the autumn they could get in their produce from the growers, have it ginned by English gins, and be assured of its rapid transmission to their own warehouses in the ports of shipment. In India, the impulse of railway transit has caused a production beyond the present means of the railways to transport.

So far as to the ancient world, which would be restored to our enterprise, and yet we must not dismiss it without a special reference to Persia. It has always been a great object with English as with French adventurers to communicate with Persia. Now no means which have been devised will effect this so surely as through railway transit. At present, in every direction, Persia finds difficulties in exporting her productions. On the east she is barred; on the north she has only the Caspian, or circuitous routes through Russia, before she can reach the seats of consumption; on the north-west she has long caravan routes to reach the Black Sea at Trebizond, or the Levant at Aleppo or Scanderoon; on the south the Persian Gulf only affords a long sea voyage to Europe. As just shown, Persia by the railway will not only obtain a means of exporting produce, but will obtain capital, capitalists, the appliances of production, the means of internal development, and a protection against foreign aggression. Whether English or French preponderate there, one policy must be pursued in maintaining Persia against Russia. We shall be handsomely recompensed if we can receive the productions of a country as populous as Spain and richer, and supply her with our manufactures.

There is an old ally of ours, the Imam of Muskat, or Sultan of Oman, at the southern mouth of the Gulf. His relations with the Arabs on both coasts are extensive; and while we increase his power, we may look forward to a diminution of local disorder, and an increase of Arab commerce.

The advantages of this route as a postal and passenger route depend on its directness and thereby shorter length, and on its rapidity of transit.

The distance from London to Bussorah by railway will be about 3,600 miles, and the distance from Bussorah to Bombay about 1,600 miles (1,584). The transit, being slower in the beginning, may be expected to improve.

	Hours.	Days.
London to Bussorah at 25 miles per hour ...	144 ...	6
Sea voyage to Bombay at 10 „ ...	160 ...	6⅔
Total		12⅔
London to Bussorah at 30 miles per hour ...	120 ...	5
Sea voyage to Bombay at 10 „ ...	160 ...	6⅔
Total		11⅔
London to Bussorah at 30 miles per hour ...	120 ..	5
Sea voyage to Kurrachee ...	120 ...	5
Total		10

The transit to Calcutta may be represented as by the quicker route 16 days, but to be reduced to 13 days on the junction of the Indian railways.

Where a reduction of transit tells most materially is by its double effect in reducing the course of post. Thus the single post to Bombay will be 12 days instead of 22, or a saving of 9½ days, and the course of post will be 25 days instead of 44, plus the interval of mails, or say 51 days. Thus, in a year, 15 sets of letters or communications can be despatched, instead of seven.

The advantages to passengers are of a corresponding nature, for in case of need it will be possible to get to and from London and Bombay in a month. In these calculations no account is taken of the ultimate completion of the railway system from Bussorah to India, nor of the Indus Valley Railways, which will further facilitate and shorten the communication with the Punjab and the North-Western Provinces of India. When this takes place the distance between London and Calcutta will be performed in from ten to twelve days, and ultimately, most likely, in a still shorter period.

Thus, in whatever light this important measure be regarded, it is found to be fraught with great advantages to this empire and to the world at large.

DISCUSSION.

The **SECRETARY** read the following communication from Sir Arthur Cotton:—"As to the present arrangements for the postal communication with India, I consider that the essential mistake is the attempting to combine the conveyance of passengers generally with that of the mails. These two things I consider incompatible, because the very high speed required for the mails is both too expensive for the great mass of passengers, and is inconvenient also for them. The result of attempting to combine the two is, that the speed is too low for the mails, and the cost and inconvenience too great for the passengers. We know what speed can be obtained on the ocean, by what was accomplished by the blockade runners during the late war, which had a speed of about 18 knots, or more than 400 miles a-day. There are, I believe, many of these vessels still for sale, and I am assured that they were most faithfully built, so as to be quite fit for ocean navigation, as, indeed, was abundantly proved. When the renewal of the Peninsular and Oriental Company's contract was under consideration, I took the liberty of writing to the Secretary of State on this subject, but it was impossible to get the matter really discussed. The plan I should propose at present would be to carry the mails by rail to Brindisi, in two and a-half days; thence to the northern end of the Suez Canal, 850 miles, in two days; through the Canal, 100 miles, in small, fast steamers, in six hours, and thence to Bombay 3,000 miles, without coaling at Aden, in eight days, total 13 days. This can certainly be done, because these speeds are accomplished in other places; but I know of no reason why higher speeds should not be attained, as the steamers would have to carry nothing but their engines and fuel. By such a means, of course all passengers who are pressed for time, and would not mind some inconvenience, might go at higher charges, while the mass of travellers might travel at such a speed as would be most suitable for them considering the cost, for it is certain that nine-tenths of them would prefer travelling cheaper though at a lower speed; but this mischievous contract with the Peninsular and Oriental Company leaves people no choice. There can be no possible question, now that the Suez Canal is in operation, that this is the line by which not only the mails, but also all passengers ought to go, as it involves the least possible inconvenience, even in its present state, the canal steamers running alongside of the ocean steamers, and receiving and delivering with only two transfers of the simplest kind, instead of four or six much more inconvenient transfers, as they now go by rail. For this service there would be no occasion for steamers of 2,000 and 3,000 tons; the blockaders would be amply large. It would require one from Brindisi to Alexandria, and three on the other side for a weekly mail, with one or two spare ones on each side. I am not able to state the expense of this, and there is no necessity for it, because no possible cost would be too great for so vast an object as bringing the two halves of this great empire nearer together. An expense of a quarter or half a million a year in such a case is in fact utterly insignificant. If those to whom time is most valuable could go quicker, and those to whom it is an object to reduce the cost (the case of nine-tenths) could go slower, the intercourse between India and England would be very greatly increased. The Suez Canal, even in its present state, is of incalculable value to England, and it is madness not to make all the use of it possible. This arrangement for the mails may be made at once, and it might be extended to two or three times a week; but there cannot be a question that arrangements should be at once commenced to provide for a still more rapid and frequent communication. The line for such, I think, must unquestionably be the direct one from the Mediterranean to Bagdad. Having travelled by it, I can state that its facilities for a railway exceed that of any other line in the world. For hundreds of miles there is a hard surface of earth, without one foot perceptible variation of level, or a single watercourse. The cost of such a line would be very little more than that of the rails and sleepers. If it commenced near Acre, it would cross Syria by the plain of Esdraelon, and there would be no one serious obstacle the whole way. Before the rail was carried beyond Bagdad, the time by this route to Bombay would be about 8 days, but the rails might be continued to the mouth of the Persian Gulf. And there is nothing whatever to prevent much higher speeds on water than I have here supposed. In fact, I believe vessels have actually been run at the rate of nearly 30 miles an hour, and, in this case, there should not be any question about cost, because the value of speed in the communication between a country whose income is 600 or 700 millions a-year and its dependency, having an income of about 300 or 400 millions a-year, is far beyond any possible cost. The income of the Atlantic telegraph, about half-a-million a-year, shows indisputably the enormous value of speedy communication between two countries having even only commercial, without imperial, connection, even when it does not provide for passengers and mails; and the sum already expended on railways in India, now about 100 millions, including interest, cost of land, &c., shows what the English public think of the importance of improved communication with the interior of India. The authorities are still providing six or eight millions a-year for this purpose, and certainly the facilitating communication from this to India is of ten times more importance. The imports and exports of India for the year ending 30th of April, 1865, were 120 millions, including treasure, so that the commercial relations alone would justify a vast outlay, even leaving out of our calculations the far greater interests involved in the imperial connection. At present, the debt of India, including railway liabilities, is not more than three years' revenue and most assuredly many additional hundred millions, if judiciously expended, will much more than increase its power of paying the interest of such sums. And it is equally certain that this point of improved communication between India and England is one of the things in which money may be most judiciously and safely expended."

Mr. **HYDE CLARKE** read a note from Mr. R. Montgomery Martin, expressing his inability from illness to attend, and his firm conviction that the through line would be carried either by Mesopotamia or Persia.

Mr. **W. P. ANDREW** was in hopes he should have heard some remarks from gentlemen present who were personally acquainted with the countries proposed to be traversed by these railways. He did not entirely agree with all the views expressed in the paper, though he quite endorsed the statement that there were few countries which presented less difficulties than Turkey to the introduction of railways, if the money could be found. The finances of Turkey were not in such a flourishing condition that they could raise 25 or 30 millions of money for such a purpose. He agreed with the author of the paper that the proposed railway would not only be a great advantage to the Turkish empire, but also to this country, as connecting it with India, and, indeed, to the world at large. It would be a pledge of peace; it would enable us to bring either of our armies to bear, either in Europe or in Asia, and the more our power was augmented in that part of the globe the better it would be for the progress and the liberty of the world. But how was the money to be raised? His own views on this subject had been repeatedly expressed in the public prints, and had been placed before successive Governments of this country; he still adhered to those views, which were that the line for us to make was that from Seleucia, through Mesopotamia, to Bussorah, at the head of the Persian Gulf. A capital of eight or ten millions would be sufficient to complete that line. We should then have a terminus at each end on the open sea, under the protection of our own guns. That line would enable us to have rapid means of communication—not to send passengers with the same rapidity as by the proposed through line, but it would enable us to send our guns and troops, and to communicate with India in twelve days. That would be a great advance on the present state of things, and it was a proposition which any ministry might recommend to the House of Commons. The through line would be in time of war quite useless; we could send neither men nor guns; and it was only in times of profound peace that it could be used either for postal or passenger communication. It would, no doubt, be of the greatest importance to Austria, and he had no doubt that empire, rising from her late tribulations, would give aid to the undertaking. France might also join in promoting it, but the line he desired to see carried out was that by the Euphrates Valley, which would bring us into connection with the Mediterranean and the head of the Persian Gulf. He could not sit down without thanking Mr. Clarke for the handsome terms in which he had alluded not only to himself but to his venerable friend Gen. Chesney. Allusion was also made in the paper to M. Lesseps' favourable opinion of the Euphrates Valley railway. Ten or eleven years ago he received from M. Lesseps, and the other distinguished French gentlemen with whom he was acting, a pressing invitation to join in the Suez Canal project, accompanied by a promise that if he consented to do so they would, on their part, co-operate in promoting the Euphrates Valley line, so as to make these great highways to the East one great international concern. He expressed a desire to receive that communication in the spirit in which it was offered, but circumstances beyond his control as an humble individual prevented him from accepting those proposals. If he had been permitted to accept them, he had no doubt, instead of now pleading the cause of the Euphrates Valley line, as he had done for many years, it would have been by this time an accomplished fact.

Mr. W. S. Fitzwilliam said he knew the country as far as Bagdad thirty years ago, and everything that had been stated by Mr. Andrew during the last ten or twelve years had been fully borne out by his experience. He must say Mr. Andrew deserved all credit for the exertions he had made in promoting the line from the Mediterranean to the Persian Gulf. He only regretted that the government of this country had not assented to his proposals, so that that line might have been carried out.

Mr. Austin (Chief Engineer of the Smyrna and Casaba Railway, and late of the East Indian Railway), from his personal knowledge of this portion of Asia, and having been engaged in the construction of one line of railway there, agreed with the views expressed by Mr. Clarke with reference to the proposed line to India. That country was now becoming so civilized, and the effect of railways in civilizing a people was so great, that he had no hesitation in saying that a line could be carried through Affghanistan to Cabul with great advantage to the country. He did not agree with Mr. Andrew's views with regard to the Euphrates Valley line: for this reason—that it would not, in his opinion, have a local traffic of £10 per mile per week, whereas a line from Constantinople to Scanderoon, forming a continuation of the Euphrates Valley, would produce a revenue of £30 or £35 per mile per week, and would be almost self-supporting. That line would pass through a mineral country, in proximity to innumerable forests, from which timber could be procured for the construction of the railway, and supplies of coal could be obtained in the district. He had been burning in his own house a species of cannel coal brought from the northern part of Asia Minor which, though not the best for locomotive purposes, would be more economical, from its being obtained so cheaply, than fuel sent out from England. In establishing a complete overland route from England to India, he decidedly gave the preference to to the proposed line from Constantinople to Bussorah. He believed the sum of 18 millions would be sufficient to make the railway from Scutari to the Persian Gulf, not including a bridge over the Bosphorus. The line with which he was connected (the Smyrna and Casaba), which had not been opened two years, had a revenue of £35 per mile per week from local traffic during certain seasons of the year; but not at the present season, because the camel traffic was suspended from the mountain passes being flooded. The line was 58 miles in length, with a branch of three miles. It had been constructed at a cost a little over £13,000 a mile, and it had gradients of 1 in 100. His own estimate was that the net revenue of the proposed line to India would be at least £600,000 per annum from traffic alone, to which would be added the postal subsidy. The commercial prospects of the undertaking were therefore of the most encouraging and satisfactory nature.

Mr. Gerstenberg remarked that it had been very properly suggested by the first speaker that the great difficulty in the way of such projects as this was the procuring of the necessary capital to carry them out. There was another important question to be solved; that was, if the traffic existed, would it be profitable? No doubt any railway in Turkey, at the estimated cost given, would be remunerative in the future; but the cost of railways was rarely within the estimates, and, therefore, a considerable margin must be allowed. One item of income calculated upon by Mr. Clarke was £100,000 a year from telegraphic despatches. The first item of revenue was the subsidy from the various European governments; that, in his (Mr. Gerstenberg's) opinion, was the only tangible guarantee, because the Turkish finances were at so low an ebb, in spite of their commercial honesty hitherto, that it was impossible to place any great reliance upon their guarantee. The Turkish Government had hitherto paid its obligations to English capitalists with great punctuality, and no doubt it would continue to do so as long as it could keep borrowing a larger amount than it could pay back. The chief source of guaranteed revenue, therefore, would be the subsidies of the European governments. The question, however, was—would those subsidies be granted? They knew it was a very difficult thing to get the European Governments to agree upon any point, and were they likely to do so on this? Therefore they must not look too sanguinely to getting any European guarantee. The second source of revenue was the local traffic of the railway. That might be regarded as almost without limit as soon as the resources of the countries were developed, but this would take a longer time than the capitalists of the present day would care to wait for. Mr. Clarke anticipated a yearly net revenue of £100,000 from telegraphic messages, but the whole revenue of the Persian Gulf cable for the last year was only about £140,000; it should be mentioned, however, that there was a project in the field for establishing a more direct telegraphic communication between London and the East Indies, which would be carried out under the superintendence of the Russian Government, and the execution of it was to be entrusted to that very able electrician, Mr. Siemens. When that was completed messages could be sent from London to Bombay without interruption. When, therefore, they looked at the fact that the telegraph generally preceded the railway, he took the liberty of suggesting to the author of the paper that he should use the influence he possessed, in commercial as well as scientific circles, in promoting the telegraphic enterprise to which he (Mr. Gerstenberg) had alluded from England to the East, as the natural precursor of the railway project which he had so ably advocated in his paper.

Mr. Jones said, they must all wish success to Mr. Clarke's project as far as Turkey and Asia Minor were concerned, but with reference to India, and communication with the East, he thought the advantages had been over-stated. They had just heard of the telegraphic enterprise between Calcutta and London, by which a message could be sent in one hour, at a cost of £3 10s., the present charge being £5. To the extent that telegraphic facilities were increased, he thought the necessity for rapid postal communication was diminished. The value of postal communication had its limits. At present they could send a letter to Bombay in fifteen days. The Peninsular and Oriental Company were under a contract rate of speed of nine miles an hour, but under stress and pressure their vessels were able to work at fourteen miles per hour, which might be increased even to 30 miles an hour, but the cost of the extra speed was so great that it was not worth the while of the government to pay the extra amount which was demanded. With a speed of 14 miles an hour the passage could be made in 15 days. By the Euphrates railway it could be done in 12 days; but railway transit was expensive, and the Peninsular and Oriental Company carried five times as cheap as the railway could do. On the next Saturday the first vessel would start, under the new contract, for the weekly communication between England and India, so that they had already in their hands that which would accomplish nearly as much as the Euphrates railway without troubling any foreign nation except Egypt.

The Hon. Capt. STEWART thought the ideas of the last speaker with reference to the telegraph to India were rather mythical. He had told them it was proposed to send messages from London to Calcutta in one hour. He would ask whether any gentleman present had received a telegraphic message even from Edinburgh in that time? They had been told this evening that steamers might be driven at 30 miles an hour, but he believed the highest speed ever attained was 17 knots per hour, and the wear and tear of even a speed like that must be very great. With reference to railways they knew that the limited mail could go from London to Edinburgh in ten hours, and there was no reason why, under careful supervision, with good locomotives and a good railway, the same speed should not be attained in other parts of the world. They had been told this evening by an eminent authority (Sir Arthur Cotton) that it was undesirable that passengers should travel at the high rate of speed indicated for the mails. Admitting that for the sake of argument, it was not necessary that passengers should continue travelling all the time. There were places where hotels could be built, and people who wished to rest on the journey could do so. Mr. Andrew, than whom there was perhaps no greater authority on the subject, had said there would be great difficulty in raising the capital for this undertaking. No doubt that was so at the present moment, but he would say a word on behalf of the Turks. Having been in that country himself, he had heard a good deal about railway enterprise there. No doubt there were faults on both sides. The Turkish Government had granted facilities for railway communication, but he did not think we, in this country, had fulfilled our part of the obligation. We had not fulfilled the conditions we made with them. We had not put sufficient rolling stock on the line to carry the traffic which already existed. He believed one reason why the Turkish Government had not paid the guarantee with punctuality was, because traffic was waiting, but the company had not sufficient rolling stock to carry it. If, however, this proposed line were guaranteed by the European Governments, there would be a sufficient control over it to ensure that whatever traffic there was would be satisfactorily carried. Looking at the financial part of the question, he maintained it would be just as easy to raise twenty millions as ten millions, but that was no argument against the desirability of the through line. He thought, probably, the line from Alexandretta (Scanderoon) to the Persian Gulf would be more advantageous to England. If they could prevail upon the Government to assist them in that, they would accept it as a part of the whole; but he maintained that the through line should ultimately be carried out, and he had no doubt if they could obtain the guarantee for the line from Alexandretta, the capital for the missing link would be forthcoming; other nations would give a guarantee of some sort, which would enable the capital to be raised. They were told that this through line would be useless in time of war; that depended upon whom we were at war with. If it were with Turkey the line would be useless, but he could hardly suppose that England, the faithful ally of that empire, would ever go to war with it. Would the shorter line be of any more value than the other? Suppose we were at war with France, we could defend our two ports on the Red Sea, but the mails could not be carried without a sufficient escort. The through line was more important, because the line from Scutari maintained an inland communication the whole way, which could only be interrupted by an enemy establishing himself in the Turkish territory; therefore the Turks themselves would be our allies in this matter. There was another point he might mention; he had the best authority possible for stating his belief that the Turkish government would grant no concession of this importance to any undertaking which did not start from somewhere near Constantinople—somewhere north of the Dardanelles; and it might fairly be asked why should not they have the advantage of the interior of their country being placed in direct communication with the capital. They were told that the line was not likely to be remunerative at present. They scarcely ever heard of a line, except the Metropolitan, which became a dividend-paying line at the first opening. But if this line was to be a guaranteed one, he hoped it would be under some government supervision and control. All the expenditure would be watched, and all that could be done to save the public exchequer would be done. One item of revenue should be specially noted. At present Turkey was allowed to levy a duty of 1 per cent. upon all goods passing through that country. All the light and valuable goods, such as silk, would come up the Gulf and cross over to Alexandretta, and all the trade from Persia would come that way which now sought an outlet through Russia to Poti, on the Black Sea; but when they got the proposed railway the whole of the trade would come to the Mediterranean.

Mr. CAMPIN did not know whether the author of the paper, in stating that the through route proposed would take them to Calcutta in twelve days, intended that the travelling should be continuous during that period by night as well as by day. Even with the opportunities of resting on the journey, suggested by the last speaker, a twelve days' journey upon a railway would be a greater stress upon the system than most people could bear. The breaking of the journey in the way suggested would lengthen the duration of it beyond the time in which it was accomplished at present. It was therefore a question whether the system of steamers suggested by Sir Arthur Cotton would not be best for passengers, but with respect to the postal traffic he thought it might be different.

The CHAIRMAN, in closing the discussion, said, as far as he was personally concerned, he believed it was pretty well known that he had taken great interest in the introduction of railways into India long before any sanction was given for their construction, and his view then was that they should be constructed by the Government and not by private companies; but he was now obliged to confess that the enterprise of those private companies had been eminently successful in India, both for commercial and political objects. They had in a short time brought together extremities of the country, which it would otherwise have been impossible to connect within any reasonable period. With regard to the rival schemes of Mr. Andrew and Mr. Hyde Clarke, he did not hesitate to say he was incompetent to pronounce an opinion. Even if he had had the details of the two projects to consider, and the map before him, and had had an opportunity of examining each, he would still be equally at a loss to decide, because he was ignorant of the physical difficulties of both lines, as well as the topography of the country. He thought, however, that neither of the gentlemen could say what the physical difficulties really were We had now a direct communication with India by the Red Sea, commercially and by telegraph, and also by a mail service. By the telegraph a communication was received from Bombay within the twenty-four hours; and if we could be certain that would be maintained, it would, probably, answer all reasonable purposes, both of trade and public concerns. With regard to letters, the last mail from Bombay came over in 22 days, which was tolerably quick work; and, moreover, the silks of China, which alone would bear the cost of railway transport, had been brought to us from India in those 22 days, *viâ* Marseilles. There were two services to do that: there was our own noble service—for so he must call it, because those vessels had been valuable auxiliaries to our navy in times of emergency—and then there was the Messagéries Imperiales service, which had run the Peninsular and Oriental Company so close that it was impossible they could undertake a new contract upon the former footing. They would have been ruined by doing so, in consequence of the enormous subsidies which the French government gave to their company. We could not do that in this country, and he hoped the House of Commons would always have an eye to due economy in these and other matters of public expenditure. For his own part he wished there could be further direct communication with India by Asia Minor, and also by the Euphrates Railway, if possible; but where was the money to come from? The English Government would not give them a subsidy, and he did not think they would get it from the Turkish Government. It would, therefore, depend upon private resources whether one or both of these projects were carried out. If they trusted to any permanency in Turkey, what chances were there of that amidst the conflicting interests at work in that unfortunate country, from which, sooner or later, the Christian population would be severed? The prospect of any guarantee of a permanent character on the part of Turkey was, he thought, very remote, although it might be given in perfect good faith. These projects, therefore, must depend for their success entirely upon public confidence in them; but was there any confidence even in English railways now? Could any railway now borrow one hundred pounds? If there was that want of confidence in this country, how could we expect there would be confidence on the part of the capitalists in foreign railways which were to run through deserts and mountainous countries, and with only a guarantee from a government which was not likely to last. Therefore he was afraid, whatever they might wish, neither of these projects would be carried out during the lifetime at least of the older portion of the audience he was addressing. He should be gratified, in the interests both of this country and of India, to see both projects carried out, but he repeated he saw little hope of their being realised in his own day: at the same time he would be far from discouraging the efforts which were made to keep this subject before the attention of the public, and he strongly urged these gentlemen to persevere. He would conclude by proposing a cordial vote of thanks to Mr. Hyde Clarke for his most interesting and valuable paper.

The motion having been agreed to,

Mr. Hyde Clarke, in acknowledging the compliment paid to him, said the project he had brought forward this evening was not his own, but that of the concessionnaires of the Scutari and Bussorah railway, who were represented by the Hon. Captain Stewart. There was no rivalry between that project and the Euphrates railway, though difference of opinion existed as to whether the Euphrates section only should be carried out, or whether the whole through line should be adopted. The question had been fairly discussed, and when the members read the paper with the help of these observations, he thought it would be found there was less in the remarks that had been made of a discouraging character than they supposed. With regard to what had fallen from the chairman, he (Mr. Hyde Clarke) thought he might ultimately come to the same views as those he had expressed with regard to railways generally in India, when he had had an opportunity of looking more fully into the subject, for he was one of those who always formed his opinion in conformity with facts and sound reasoning. He could not concur with the chairman in his views respecting the future of Turkey, for geographical reasons; because even if the Christian population in European Turkey separated from the Turks there still remained the main part of the empire, which was in Asia, and consisted of a Mussulman population, and he believed the general feeling was, that the existence of the Turkish Empire would thus be maintained, and it was through that part of the empire that the proposed line passed. With regard to the observations of Mr. Gerstenberg as to the telegraph, he thought they tended to confirm the views which he (Mr. Hyde Clarke) had advanced as to the extent and value of the telegraphic communication on the proposed railway, and if they were to have a telegraph through Russia, it was an additional reason why they should have another line by this route. He was happy to find that his estimates of the cost and profits of the undertaking had been more than confirmed by so competent an authority as Mr. Austin, who had put the latter at a very much higher figure than he (Mr. Hyde Clarke) had ventured to do; and looking to the gross receipts of the Persian Gulf telegraph, he did not think the estimate he had made of revenue from that source was at all excessive. With regard to the bridge over the Bosphorus, it was not included in the proposed undertaking.

The paper was illustrated by maps of the districts referred to, kindly lent by Mr. J. Wyld, M.P., and Mr. William Smith, C.E.

Proceedings of Institutions.

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Marlborough Reading and Mutual Improvement Society.—Mr. Ellis Roberts fulfilled his engagement with the Mutual Improvement Society on Monday evening, 17th February. The attendance was large, and Mr. Roberts showed himself an accomplished musician, and a perfect master of the harp. He was accompanied by a lady vocalist, Miss Mabel Brent.

Yorkshire Union of Mechanics' Institutions.—*Stanningley Mechanics' Institute.*—The annual *soirée* of this Institute was held on Shrove Tuesday in the Town School, which was filled to overflowing. Mr. E. Slater occupied the chair, and was supported by Mr. Alderman Robertshaw, Mr. Henry H. Sales, Mr. Councillor Harrison, Rev. T. Jowett, and other gentlemen. The report gave a highly satisfactory account of the work done by the Institute in the past year, and spoke of all the branches being in thorough working order. The finances showed a balance in hand. One of the prominent features is the Penny Savings Bank, which now contains deposits amounting to thousands of pounds, and is in connection with the Yorkshire Penny Savings Bank. The evening classes are progressing satisfactorily.

BRIEF OUTLINE OF THE SYSTEM OF PUBLIC INSTRUCTION IN THE KINGDOM OF THE NETHERLANDS, 1868.

By John Yeats, LL.D., Middle School, Peckham.

At a time when public instruction has become a leading topic, it is not surprising to find that speakers and writers frequently refer to the state of things in Prussia and France. But in referring to those countries, let it not be forgotten that their political and social institutions are widely different from our own; and that the means by which success has been ensured, and on which it is, perhaps, mainly dependent, could never be made available in this country, such means being incompatible with our national characteristics. Allow me, therefore, to draw attention to another people, whose educational institutions are of much older date, and, if possible, of higher aims than those of either country referred to; whose social, moral, and religious principles are, moreover, more nearly akin to our own—I allude to the people of the Netherlands. Educational reform began among them with primary instruction, the humblest classes being helped first. This reform aroused the emulation of the middle classes, who, in turn, demanded for their children special culture and schools in harmony with the requirements of the age; while the classes who frequent the universities are not yet reached. A law affecting these institutions is understood, however, to be in active preparation.* Without dwelling upon the great social movements (1761—1763) which led to the present improved state of education, and which continued without intermission until they resulted in the law of 1806, let me first draw attention to a society to which is rightfully assigned the honour of having laid the corner-stone of the structure of national instruction—the "Maatschappy: Tot Nut van 't Algemeen."† Wholly self-dependent, continually struggling against difficulties, and frequently disappointed through prejudice and party-spirit, this society took education, in its forlorn condition, to heart, and nobly adhered to it throughout.

By its instrumentality ideas, more methodical and systematic, respecting teaching as an art, were diffused; competent men were set to work to prepare suitable books for teachers and pupils; schools (*departement scholen*) were established in which instruction was not charged for at all, or else made accessible at a very small fee; training schools for teachers were founded and supplied with necessary funds; the scanty salaries of many teachers were raised, so that domestic trouble might not influence the general tone of the school; in short, where aid was needed it was given cheerfully and liberally. And, as time showed, not in vain; for the favourable results obtained within a very few years interested the nation at large. Even when at length Government took the burden on its own shoulders this society, not thinking its task complete, continued directly co-operating with the laws, and furthering the good cause wherever possible; and to our own day many infant schools, repeating schools, evening classes for lower instruction, night classes for technical instruction, industrial schools, Sunday schools, charity schools, &c., &c., are the living monuments of the Maatschappy.

As already mentioned, the first great law on instruction was passed in 1806, and this law, though replaced by another framed more in accordance with the wants of the day, is still the basis of the whole system. Revised, extended, and improved, but essentially the same, it is known as the new law on lower instruction of 1857. In 1863 a law for middle instruction was passed, and higher instruction is now awaiting its turn.

The whole system may thus be conveniently divided into—

(*a*.) Lower* or primary instruction.
(*b*.) Extended lower instruction.
(*c*.) Middle instruction.
(*d*.) Higher instruction.

The leading characteristics are—

1. That public instruction is an object of constant care to the Government.
2. That public instruction is based on the precepts of Christianity; but that no dogmatic instruction is suffered in any of the public schools.
3. That public instruction is not compulsory, while practically it is universal in its operation.
4. That private individuals or sects or corporations are free to establish schools for their own advantage,—subject to the requirements of the general law.
5. That no instruction is allowed to be given by any but persons of approved capacity, and of acquired proficiency in the art of teaching.

Lower or primary instruction comprises only that knowledge which the state may justly demand from every citizen as the minimum of intellectual culture. Being the chief and often the sole opportunity of training for the children of labourers and artisans, it aims directly at knowledge which is indispensable for practical purposes.

The subjects taught are:—Reading, writing, arithmetic, the Dutch language, geography, history, natural history, form, vocal music.

Every commune is obliged by law to have one school or more for lower instruction, according to locality or number of inhabitants. The expenses connected therewith, such as salaries, repairs, supplies of books, stationery, fuel, light, &c., are to be defrayed by each commune. In case a commune is unable to raise the necessary funds, it receives a gratuity from the province to which it belongs, or from the State.

If a commune feels the desirability of higher instruction for the young, schools for an extended range of knowledge may be established. They can be either separate from, or united to, those for lower instruction. The subjects, additional to those for lower instruction, are:—

(*a*.) The rudiments of the French, German, and English languages.
(*b*.) Mathematics.
(*c*.) Rural economy.
(*d*.) Gymnastics.
(*e*.) Geometrical drawing.
(*f*.) Girl's plain and fancy work.

The schools for lower and extended lower instruction are under the supervision of the Minister of the Interior who is directly aided by—

1. Local Boards of Instruction.
2. District Inspectors.
3. Provincial Inspectors.

In every commune there is a local board of instruction, whose duty it is to see that the requirements of the law are strictly complied with, the schools kept in good condition, and the teachers not in want of necessary materials, &c. For such purposes the board visit the schools twice a year, to inquire into the general character of the instruction given, the progress of the pupils, &c. An annual report has to be sent to the magistrates of the commune, and to the district inspector. The board further assist and advise the head master, co-operate with him in every way possible, and do all in their power to promote the cause of education.

The district inspectors indirectly superintend the local boards of education. By visiting the schools, and by attending the weekly meetings of the teachers, they keep

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[*] In the three universities of Leiden, Utrecht, and Groningen, there are studying for divinity 319 young men; jurisprudence, 593; medicine, 213; science, 96; letters, 76; total, 1,297.

[†] This society originated in the following manner:—"In the year 1784, John Nieuwenhuizen, a humble minister of a Mennonite or Baptist congregation at Edam, a small town situated in North Holland, a few miles from Amsterdam, perceived the defective condition of primary education, and the slenderness of the existing means for its improvement. He was a man who, though moving in a retired sphere, had both the sense to conceive the means of improving the social condition of the people, and the intrepidity to put his designs into execution. At first not much was attempted. A society, composed of himself and a few friends, began to agitate the question of improved education, and to encourage the growth of morals and general intelligence. Little by little the society increased in the number of its supporters, and extended its usefulness, till it finally spread over the whole of Holland, and every town and village was subject to its cheering influence."—*Chambers' Tour.*

[*] It must be well observed that the terms lower, extended lower, middle, and higher instruction, refer solely to the subject taught, and the more or less extensive treatment of those subjects, and have no relation whatever to social rank and position.

themselves well acquainted with the general state of instruction in their districts, and give an annual report to the provincial inspector and to the State deputies.

The provincial inspectors endeavour, partly by visiting the schools, but mainly by correspondence and intercourse with the district inspectors and the local boards of education, to promote continual improvement. They also consult about scholastic affairs with the Home Minister, to whom an annual report is handed in. (Vide Titel v., Art. 52, 53, 64, 67, law of 1857).

As to the second point. The differences in religious opinion are various in Holland, but the heads of all parties unite cheerfully in upholding the State secular instruction. Ministers of all the sects are required by their respective synods, and by the law, to give in their churches weekly instruction of a formal character to the young of their own faith; and no jealousy or sullen indifference manifests itself. (On this head see the correspondence quoted by Mr. W. Chambers, page 17; see further pages, 26 and 32.)

The third point is undoubtedly of no less importance than the other two. Really good teachers, and especially educators, are nominally many, but in reality few. To understand the youthful mind, to train it, to lead it in the paths which tend to virtue, are no easy matters, and require a great deal of experience, as well as the possession of much general knowledge. Hence it is that the government will not trust the teaching of the young to men who have not been specially trained for this difficult task.

The inspectors of the several school districts constitute, under the presidency of the provincial inspectors, the provincial boards of examination.

Pupil-teachers, whether trained in one of the colleges or by the headmasters of the lower schools, are obliged to submit themselves, at the age of 18, unless exempted on the score of illness, to an examination, which, if passed, gives them their first degree, and enables them to officiate as assistant-teachers. At the age of 23 they undergo a second examination, to obtain the rank of headmaster. If preparing for the office of headmaster of a school of extended lower education, they have, besides, to pass special examinations in the subjects mentioned under *a* and *b*.

Where vacancies for public employment occur, competitive examinations are held, and the magistrates of the commune have to choose one out of the three or not more than six who have obtained the highest number of marks respectively. The examinations are conducted by the district inspector.

Having thus outlined the chief characteristics of the system of primary or lower instruction, I proceed to speak of middle instruction.

Middle instruction is a continuation either of the primary or of the extended primary course. The subjects are gone into more minutely, and are studied to greater perfection, while additional help is provided for scientific and technical knowledge.

Middle instruction, as a continuation of the lower, is given in—

(*a.*) Evening classes for the children of artisans.
(*b.*) Day schools of two years' course.

Middle instruction, as a continuation of the extended primary course, is given in—

(*c.*) Schools of three years' course.
(*d.*) Schools of five years' course.
(*e.*) Commercial and industrial schools.
(*f.*) Technical schools.
(*g.*) Agricultural schools.
(*h.*) The Polytechnic school.

The subjects taught in schools *a* and *b*, are:—Mathematics; theoretical and applied mechanics, machinery; physics and chemistry; natural history; either technology or rural economy; geography; history, ancient and modern; the vernacular tongue; political economy; geometrical and free-hand drawing; gymnastics.

The subjects taught in schools of three years' course are:—Mathematics; physics and chemistry; botany and zoology; political economy; book-keeping; geography; history, ancient and modern; Dutch, French, German, and English languages; caligraphy; geometrical and free-hand drawing; gymnastics.

The subjects taught in schools of five years' course, are:—mathematics; theoretical and applied mechanics, technology and machinery; experimental physics, experimental chemistry; mineralogy, geology, botany, and zoology; cosmography; principles of the communal, provincial, and civic organisation; political economy, with the statistics of the kingdom of the Netherlands, especially its colonies and possessions in other parts of the world; geography; Dutch, French, German, and English languages and literature; the theory of commerce, raw products and book-keeping; caligraphy; geometrical and free-hand drawing; gymnastics.

The subjects taught in the Agricultural schools are:—political economy; applied mathematics; mechanics and knowledge of agricultural implements; the arrangement and construction of farm buildings; geometrical drawing, viz., architecture and machine drawing; physics, chemistry, and meteorology; agricultural technology; mineralogy and geology; botany and zoology, general and special; structural botany and zoology; the knowledge of the external forms, races, diseases, and requirements of domestic animals; general and special agriculture—tillage, pasturage, forest and fruit-tree culture, horticulture, forcing, &c.; the rearing of cattle, comprising poultry, bees, and dairy-husbandry; agricultural book-keeping; practical agriculture, comprising forest-culture, and the management of domestic animals; colonial agriculture and forest culture.

The Polytechnic school is established to train young men for industrial pursuits, or for technologists who require a greater amount of theoretical and technical knowledge than can be obtained at a school of five years' course. For the profession or calling of civil engineer, architect, naval engineer, mechanical engineer, mining engineer, the subjects taught are—higher algebra; spherical trigonometry and analytical geometry; descriptive geometry and its applications; the differential and integral calculus; land surveying, levelling, and geodesy; theoretical and practical mechanics, with knowledge of implements; mechanical technology and the construction of implements; applied, experimental, and analytical chemistry; chemical technology; knowledge of the present state of manufactures; mineralogy and geology; applied geology and mining; metallurgy; hydraulics, roadmaking, making of railroads, building of bridges; civil architecture; naval architecture; geometrical and freehand drawing; practical exercises with tools and lathes; making of models of machinery; political economy; commercial legislation; legal enactments concerning embankments, public works, mining, and industry.

Schools for middle instruction are either public or private.

Public schools are those which are established and maintained by the communes, by the provinces, or by the Government, alone or together. All other schools are private.

Private teachers, as stated before, may compete with the Government in offering instruction of a superior or of a special character.* All private schools, however, must be classified and reported on by the public inspectors as primary or middle schools, according to the results manifested in them. Private teachers, if aggrieved by the decisions of inspectors, possess right of appeal. As a case in point, see "Verslag," p. 38.

To private establishments gratuities may be given by the commune, by the province, or by the Government, under such conditions as are thought necessary by said communes, provinces, or Government. Private establishments enjoying such gratuities are virtually converted into public schools, accessible to all classes and all sects.

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* The Crown Prince of Holland was sent, in his 14th year, to a private school, Noorthij, near the Hague, in 1854.

Every commune whose inhabitants exceed the number of 10,000 is by the law obliged to have one school of two years' course, day and evening school. In case communes establish schools of three or five years' course, evening classes for technical instruction are to be held therein, for the sake of apprentices and artisans.

The state meets the demand for scientific and technical instruction by establishing fifteen schools for middle instruction, of which at least five are of a five years' course. There is, moreover, one Government Agricultural School and one Government Polytechnic.

The expenditure of those middle schools which do not belong to the fifteen above mentioned is met by the communes, most of which are subsidized by the state.

A small fee is charged to every pupil.

In a school of two years' course the fee is not to exceed 12 florins (one guinea) per annum, and in schools of three or five years' course the annual fee is not to go beyond 60 florins (five guineas).

All pupils of the Government Agricultural School pay annually 100 florins (8 guineas), which entitle them to attend all the classes.

In case pupils wish to follow special lessons, the yearly fee is, for lessons given:—Once a week, 5 florins (9s.); twice a week, 10 florins (18s.); thrice a week, 15 florins (£1 7s.); four times or more, 20 florins (£1 16s.).

Pupils who attend all the classes at the Polytechnic are charged 200 florins (16 guineas) per annum.

In case pupils wish to follow single lessons, the annual fee is, for lessons given:—Once a week, 10 florins (18s.): twice a week, 20 florins (£1 16s.); thrice a week, 30 florins (£2 14s.); four times, or more, 40 florins (£3 12s.).

The number of pupils at the Polytechnic School was, in 1865, 104.

Examinations are annual; the final examination, if successful, entitles the student to hold Government employment, as architect, civil engineer, &c.

Pupils wishing to enter a School for Middle Instruction, have to submit themselves to an initiatory examination in the subjects comprised within primary instruction.

The superintendence of the Schools for Middle Instruction is entrusted to the Minister of the Interior, aided by

(*a*.) Local boards of instruction, appointed by the magistrates.

(*b*.) Inspectors appointed by the State.

The duties of the local boards and inspectors for middle instruction are very nearly the same as those of the local boards and inspectors of lower education.

The directors and teachers (lectors) of middle instruction are appointed by the State. No person can be so appointed unless possessed of an academical degree, or of a diploma given by the commissioners of education.

In special cases the Government decides. With what care the examinations are conducted, see pages 77—93, *Verslag van den staat der Hooge Middelbare en Lagere-Scholen en het Koningryk der Nederlanden over* 1865-1866.

To conclude with a few remarks. Besides the clinical schools of medicine, veterinary schools, schools training for the navy and military service, the civil service, etc., there were in operation, in the year 1865, 21 schools of three and five years' course, attended by 1,466 pupils, taught by 219 teachers. If we keep in mind that of these 21 schools four only are government schools, and thus 11 government schools are still to be established; that besides the great number of evening schools for technical instruction, and schools of two years' course, there were at least 11 private establishments for middle instruction; that since 1865 the number of middle schools has been increased by 15 (among which is one government school of five years' course), there can be no doubt that for a population of 3,493,611 inhabitants ample provision has been made, and that within a few years middle and technical instruction will be as general as lower instruction is at present.

The expenditure of the government is 35,766,793 florins (£30,429), from which amount is to be subtracted the surplus of the school fees, amounting to 3,616,014 (£3,077). The expenses are thus 32,150,779 (£27,362).

During nearly four years I was resident in Holland; but for the foregoing notes I am indebted to several friends, and chiefly to Mr. C. P. van Tiel, of Westzaan, now in London, whose attainments as a teacher, and whose intimate knowledge of English, are guarantees for the accuracy of the statements.

Fine Arts.

Fine Art Exhibition at Amsterdam.—An exhibition of the works of living artists, Dutch and foreign, is announced to open on the 7th September, in the present year, at Amsterdam, and to close on the 5th of October, unless the directors see reason for extension of the time. The exhibition is under the joint management of the authorities of the town of Amsterdam and the Council of the Academy of the Beaux Arts. The programme includes painting, sculpture, architecture, engraving, and drawings, but no copies will be admitted, whether in oil or otherwise. The Commission retains the power of admission or rejection, but liberally offers to pay the cost of transport of works sent by the ordinary means, but not by express. The time of reception is between the 10th and 24th of August, and the works are to be accompanied by a letter to the Commission de l'Exposition Local de l'Académie des Beaux Arts, Oudemanhuispoort, B 106, containing the names in full, and the address of the artist, and (if for sale) the price of the work. The municipal authorities give six gold medals, of the value of one hundred florins each, but exhibitors may compete or not, as they please.

Manufactures.

Preparation of Coffee.—The *Colombo Observer* says:—"Few perhaps have any idea of the trouble and expense required to bring the coffee into the state in which it passes into the hands of the retail merchant. When ripe, the berry is of a deep red colour, and much the same size and shape as a cherry, and hence the planter designates it cherry coffee. Like that familiar fruit, too, it contains a juicy pulp wrapped in a delicate skin; but here all resemblance ceases, for the juice of the coffee is sticky, and by no means agreeable in taste or flavour, and instead of enclosing one seed it envelopes two, each of which has a tough membranaceous cape or covering, called the parchment. It will be observed, therefore, that the bean has to be relieved of two coats, viz., the pulp and the parchment. The process of pulping is generally performed by machinery on the estate, while the fruit is fresh, as, if allowed to lie, the pulp ferments and impairs the flavour of the seeds. When the pulp has been got rid of, the parchment is found covered with a tenacious coating of the juice, which is removed by maceration and washing in water. When quite clean, the coffee is taken out of the troughs, spread on a raised platform called the barbacue, and exposed to the sun until dry. At this stage the coffee leaves the hands of the planter, as few except native growers attempt to remove the parchment, which is usually done by the aid of steam machinery. The agent used for this purpose is a huge solid iron wheel, that trundles round on its edge in a circular trough, like the pug mill used by bricklayers for preparing their mortar. The coffee is laid in the trough, and the action of the wheel tears and removes the parchment; the coffee being transferred to a fan, the shreds are blown away, while the beans descend into a recess, from which they are lifted by machinery into the hopper of the sizer. The sizer consists of a long wide tube of wire netting, placed in a slanting position, so that the coffee may slide down towards the lower end, and revolving slowly on an axle so as to cause the beans to pass through the netting. The meshes gradually increase in size towards the bottom of the tube, so that the small beans pass through first, while the larger ones travel downwards until they find an opening sufficiently large to permit of their escape. Troughs placed below receive the coffee as it drops through the netting, and by this simple contrivance a vast amount of manual labour is saved in sorting the batch according to the size of the bean. Hand-picking is afterwards resorted to for the removal of bad or bruised beans. It will thus be seen that coffee requires a great amount of labour in its preparation. Indeed, we may safely say that, besides the mechanical operations, every single bean has to be looked at and handled before it is fit for roasting and grinding."

Commerce.

Discovery of New Oyster Beds.—A letter from Ostend, in the *Organe de Namur*, gives an account of a discovery of some importance. The writer states that, during the late storms, some English fishermen were driven from the neighbourhood of Calais towards Ostend, and, having kept their nets in the water to lessen the speed of the vessel, were astonished on raising them to find them full of magnificent oysters. Having transferred the oysters to a Billingsgate boat, the fishermen returned to the same ground, and for several weeks obtained an abundant harvest. The beds are reported to be about four leagues from land, and at a spot whence Ostend and Blanckenberghe are perfectly distinguishable. It is said that new oyster beds are being discovered every day, and that the quantity of oysters is incalculable.

Cultivation of Tobacco in Germany.—In Germany the cultivation and sale of tobacco are subject to no restriction, but the land on which it is grown is subject to a very light tax, proportioned to the quality of the soil; Prussia may be taken as a type of the German system. and in that country the procedure is as follows:—The tobacco fields are divided into four classes, the first being estimated to produce 9 quintals per *morgen*, the second 7½ quintals, the third 6 quintals, and the forth 4½ quintals. The tax is reckoned at 3·50 frs. per quintal, but is calculated on the acreage (a morgen being equal to about five-eighths of an acre). Thus a morgen of the first class land pays 31·50 frs., of the second class 25·75 frs., and so on. A plot of ground of less than six square rods pays nothing. In 1866 there were in Prussia 1,690 morgens of land of the first class, 13,276 morgens of the second, 8,093 of the third, and 1,027 of the fourth class; in all 24,086 morgens subject to duty, and 1,449 morgens, in small lots, free of duty. These figures are less than those reported ten years ago; a fact which shows that more foreign tobacco is smoked, for it is not probable that the average consumption in 1866 was smaller than that in 1856, when it amounted to 3 lbs. per head. The import duty is about 1⅝d. per lb.

State of Trade in the Potteries.—The *Staffordshire Sentinel* says:—"The total amount of our foreign trade in earthenware and china still continues to fall far short of the corresponding period last year. The aggregate number of crates exported in January, 1868, was 9,114, against 9,813 in January, 1867; and the total number of casks exported was 2,902, against 4,834. Thus the entire number of packages exported was 12,016, against 14,647, a decrease of 2,631. The full effects of the declension are not yet felt in the production of wares, for manufacturers have not diminished the work given out to their hands to an equal extent with the decline in actual sales, as is clear from the important fact that large numbers of packages have been sent off from the Potteries which have not been exported. Indeed, the wharves and warehouses of the Anderton Company, at Runcorn, are crammed with goods awaiting final orders for shipment. Not fewer than 10,000 crates, &c., are said to have accumulated there, which it is not yet deemed safe to export. The plethora is so great as to be scarcely capable of increase from the want of space, which indicates the probability of a decrease in production, were it for no other reason than this, that there is not room to stow away the unsold goods. The returns of the total number of packages exported in January, compared with those of December, are 12,016 against 12,918, a decrease of 902. But the decrease does not continue in the same ratio as in December compared with November, when the decrease was 2,541. The tide, however, still continues to ebb, though not to the same extent. As the chief declension continues to be in our exports to the United States, it affects the trade of the central and northern parts of the Potteries chiefly, they being the principal seats of our manufactures for the American market. The extremely quiet state of the demand in the home market operates most powerfully on the works in which the superior classes of goods are made. In Longton, where common china goods for the home market are extensively made, there is a much better supply of work than in other towns. The potting trade, it is sometimes said, is one of the last to decline and to revive in this country; and, as there is a decided improvement in some other staple trades in Great Britain, it may be hoped that as the spring advances the demand for earthenware and china will improve."

International Maritime Exhibition at Havre.—Mr. Frederic Bernal, Her Majesty's Consul at Havre, in a letter to the *Times*, calls attention to the above Exhibition, already noticed in the *Journal*. It is to open on the 1st of June, and the time of receiving applications for space has been prolonged to March 10. He says:—"I was sorry to learn from the secretary, that although some demands for admission had been received from Great Britain, including entries in three classes made by me on account of the Board of Trade, yet the number fell far short of what had been reasonably expected. I think this is a great mistake on the part of all who are connected in any manner with our mercantile marine, and can only attribute it to their being unaware of the wide scope and importance of the above exhibition. It has been taken under the immediate patronage of the Emperor and the Prince Imperial; it has excited the greatest interest in the seaport and other important towns of France, and I see that an influential committee has been formed in New York to organise a proper exhibition of American naval objects and appliances. The building will consist of a covered gallery in the form of a square, enclosing a large open space, and the whole area will comprise about 12½ acres. The rates to be paid by exhibitors, varying according to locality, are moderate. There will be in all 43 classes, embracing every description of article connected with ships and seamen. Practical trials of lifeboats, and other life-saving apparatuses, will be made. Apart from the more serious business of the Exhibition, but in connexion with it, there will be nautical fêtes and regattas, and there will also be a large salt-water aquarium, which will represent 'Fingal's Cave,' and will without doubt form one of the most interesting objects in the exhibition. Such an exhibition, held in the 'Liverpool of France,' at our very doors, ought to possess very great attractions for a maritime nation like Great Britain, and I yet venture to hope that we may be better represented thereat than at the present moment appears likely. Persons requiring further information can receive the same on application to me."

The Russian Tariff.—An inquiry is now proceeding relative to the revision of the Russian tariff. The cotton-spinners are vigorous supporters of the present protective system, and the following is the statement given in the *Voix* of St. Petersburg, of the working of the present tariff in their case:—The existing rates of duty were established in 1822, and between 1844 and 1864 the importation of cotton yarns fell from 600,000 to 72,000 pouds per annum, while raw cotton, on the contrary, has followed the opposite course, and amounted, in 1866, to nearly 2,500,000 pouds. The present import duty on cotton yarns is higher than the cost of Russian manufactured yarns, consequently, the tax on the population generally is a very high one, and there seems no doubt that it will be altered. The free-trade organs of St. Petersburg speak confidently as to the future; they say that the great reforms recently made have had an extraordinary effect upon the economic condition of the country; the growth of the income from customs and other indirect taxes is remarkable; the increase in 1867, as compared with the previous year, having been nearly six millions of roubles, showing an increase in the consumption of articles not of prime necessity, and consequently in the condition of the population. At the same time the increased imports of raw materials and machinery show that the home trade has not suffered by the increased imports of manufactured articles; and the extent of land in cultivation is said to have increased since the emancipation of the serfs.

Notes.

Great Organ for Notre Dame.—The French Government has ordered a very powerful organ of Messrs. Caville-Coll for the cathedral of Nôtre Dame, the restorations of which are just completed, and a special commission has been appointed to watch over and receive the work. The commission includes the composers Auber, Thomas, and Rossini, M. Benoist, professor of the organ at the Conservatoire, Baron Séguier, of the Academy of Sciences, several dignitaries of the Church, the Director of the School of Religious Music, M. Viollet-le-Duc, the architect, and several officials.

Agricultural Exhibition at Brussels.—The Société Agricole of Brabant announces a great exhibition of cattle and implements, to take place in Brussels in the middle of the month of June next. The mechanical portion of the exhibition is tô be universal. By a royal decree there is to be a lottery established for the purchase of implements, which are to be distributed by lot amongst the subscribers. This is, we believe, the first time that a lottery has been established in the interest of agriculture.

Sale of the Late Paris Exhibition Building.—The iron portion of the building in the Champs Elysées has been sold to a company of contractors, for the sum of £60,000; it is not yet known what is to be its future destination.

Population of Italy.—The total population of Italy, according to the last census, was 24,231,860 persons. The density of the population is 85 persons per square kilometre (about 247 acres); of these there are 12,128,824 males, against 12,103,036 females (an excess in favour of the males of 25,788 persons). As regards age, there were 3,788,513 children under six years of age; from 6 to 24 there were 8,376,884 persons; 10,452,613 from 24 to 60; and 1,623,304 persons above 60 years of age. The proportion of married against single is 8,556,175 to 14,052,381; and 1,623,304 widows and widowers. Of the single there is a difference of 690,901 in favour of the males; there are 498,354 widowers, against 1,124,950 widows. As regards occupations, more than one-third of the entire population (8,292,248 persons) are engaged in agricultural pursuits; 3,923,631 in manufactures and commerce; 58,551 in mining; 549,293 in professions; 174,001 priests and ministers of religion; 147,448 in government and public employment; 242,386 soldiers, pompiers, police, forest keepers, and rural police; 520,686 domestics, &c.; 759,771 landed proprietors; 305,343 poor (in the strict sense of the word); and 9,258,502 persons without definite occupation, and in great part aged persons and children. There are 5,167,480 families in Italy distributed in 3,766,204 houses. Of the language spoken, 23,958,103 persons use Italian; 134,435 French; 20,393 German; and 118,929 persons spoke other languages such as Greek, Albanese, and Slavonian. The number of persons of the various religious denominations was 24,167,855 Roman Catholics; 32,932 Christian Dissenters; 29,233 Jews; and 1,850 professing other religions. Italy contains 8,856 communes, of which 2,663 have a population of less than 1,000 inhabitants, and only 9 with a population exceeding 100,000. The average population of the communes is 2,830 persons.

Correspondence.

National Musical Education.—Sir,—I observe that neither in the 1st nor in the 2nd report is there any allusion to our training colleges for schoolmasters and mistresses, as channels through which the musical education of the masses may be effected. Now, I feel assured that if your scheme can be so applied as to carry efficient musical instruction into these institutions, you will at once find a ready and effectual means of distributing its advantages throughout the country. Every elementary school which is happy enough to secure the services of a well-trained and efficient teacher of music in the person of its master or mistress, quickly becomes a musical centre, from which the whole parish (rich and poor) is gradually trained to appreciate, to love, and frequently to seek the culture of music. There is already strong inducement for the students at the training colleges to acquire music if they can, for a good knowledge of the art is now almost invariably desired by managers of schools in search of teachers, and considerably higher stipends are obtained by those who can train a choir and conduct a singing class. But there is generally great difficulty in obtaining systematic instruction in the theory and practice of music in these colleges, and hence the knowledge acquired is, for the most part, of a very imperfect kind, and their subsequent attempts to teach music are often abortive, if not positively mischievous. I most heartily hope that you may be able to do something in this direction, even if my suggestion be thought impracticable.—I am, &c., Thos. Bacon, Secretary to the Winchester Diocesan Training School.

Kingsworthy-rectory, Winchester, Feb. 20, 1868.

MEETINGS FOR THE ENSUING WEEK.

Mon......Farmers' Club, 5. Mr. George Jackson, "Would not the make of English Cheese be generally improved by the introduction of Cheese Factories?"
R. United Service Inst., 8½. Major W. H. Ross, R.A., "Field Artillery on the Connected System."
Society of Engineers, 7½. Dr. Cullen, "On the Surveys of Proposed Lines for a Ship Canal between the Atlantic and Pacific, on the Panama Railroad, and on the Darien Ship Canal."
Royal Inst., 2. General Monthly Meeting.
Entomological, 7.
British Architects, 8.
Medical, 8.
Victoria Inst., 8.
Social Science Assoc., 8. Rev. Henry Richard, "On Standing Armies, and their Influence on the Industrial, Commercial, and Moral Interests of Nations."
Tues ...R. Inst. Mr. Geo. Scharf, "On Historical Portraiture."
Civil Engineers, 8. Mr. C. P. Sandberg, "On the Manufacture and Wear of Rails."
Pathological, 8.
Anthropological, 8.
Syro-Egyptian, 7½. Mr. D. Smith, "On the supposed Alphabet lately discovered on the Slabs from Nineveh."
Wed ...Society of Arts, 8. Mr. John Randall, "A Workman's Views on Technical Education."
Pharmaceutical, 8.
R. Society of Literature, 4½.
Obstetrical, 8.
Thur ...Royal, 8½.
Antiquaries, 8½.
Linnæan, 8. Mr. Roland Trimen, "On Mimetic Analogies among African Butterflies."

Chemical, 8. 1. Messrs. Wanklyn and Chapman, "Action of Oxidising Agents on Organic Compounds, &c." 2. Dr. Stenhouse, "On Chloranil, and on the Action of Nitric Acid on Picramic Acid." 3. Mr. W. H. Perkin, "On Hydride of Aceto-salicyl."
Royal Inst., 3. Mr. George Scharf, "On Historical Portraiture."
Society of Fine Arts, 8. Mr. F. Y. Hurlstone, "On Satire."
R. Society Club, 6.
Artists and Amateurs, 8.
FRI.......Geologists' Assoc., 8.
Philological, 8.
Royal Inst., 8. Mr. Kingdon Clifford, "On some of the Conditions of Mental Development."
Archæological Inst., 4.
SAT ......Royal Inst., 3. Professor Roscoe, "On the Non-Metallic Elements."

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par. Numb.

Delivered on 16th January, 1867.

SESSION 1867.

516. Railways—Return.
580. County Treasurers (England and Wales)—Abstract of Accounts.

Delivered on 17th January, 1868.

Prison Discipline (Colonies)—Digest and Summary.

SESSION 1867.

471. (I.) Fire Protection—Index to the Report.

Delivered on 20th January, 1868.

SESSION 1867.

507. (I.) Health of the Navy—Statistical Abstract.

Delivered on 23rd January, 1868.

4. Provincial Workhouses—Letter and Report of Dr. Edward Smith.

SESSION 1867.

431. (A. VII.) Poor Rates and Pauperism—Return (A).

Delivered on 28th January, 1868.

Trades Unions and other Associations—Report by the Examiners.

Delivered on 30th January, 1868.

33. Education—Report by Professor Levi.
46. Lighthouses, &c.—Reports.

SESSION 1867.

497. (I.) Oxford and Cambridge Universities Education Bill—Index to the Report.
526. Local Taxation—Returns.
561. Coals—Return.

Delivered on 31st January, 1868.

22. Bill—Church Rates Regulation.

SESSION 1867.

Public Petitions—Index.

Delivered on 5th February, 1868.

43. Court of Session (Scotland)—Returns.

SESSION 1867.

431. (B.) Poor Rates and Pauperism—Return (B).
563. Lancashire and Cheshire Steam Coals—Report.

Delivered on 8th February, 1868.

16. East India (Weights and Measures)—Report.
37. Metropolis Rates—Abstract of Returns.

SESSION 1867.

205. (I.) Waterford County Election Petition—Index.

Delivered on 11th February, 1868.

17. Metropolitan Board of Works—Returns.
45. Metropolitan Board of Works—Report.

Delivered on 12th February, 1868.

SESSION 1867.

565. Iron-plated Ships and Batteries—Return.

Delivered on 13th February, 1868.

26. Bill—Public Departments (Extra Receipts).

SESSION 1867.

545. Taxes and Imposts—Returns.

Delivered on 15th February, 1868.

50. Election Petitions Trial—Letter from the Lord Chief Justice.
Inland Revenue—Eleventh Report of Commissioners.

SESSION 1867.

211. (I.) Tipperary Election Petition (1867)—Index to the Minutes of Evidence.

Delivered on 17th February, 1868.

51. Post Office (Anthony J. Duffy)—Correspondence.
53. Local Taxation, &c.—Returns.
73. Educational Statistics—Letter from the Rev. C. A. Stevens.

Delivered on 18th February, 1868.

28. Bill—Habeas Corpus Suspension (Ireland) Act Continuance.
70. Public Income and Expenditure—Account.
72. Railway Bills, &c.—Report of the Board of Trade.
Agricultural Returns for 1867.

Patents.

◆

From Commissioners of Patents' Journal, February 21.

GRANTS OF PROVISIONAL PROTECTION.

Aërial locomotion, obtaining—412—P. E. Masey.
Barytes, &c., separating powders of sulphate of—437—J. E. Billups.
Baths, floating saloon—222—J. Dixon.
Baths, vapour—409—B. M. Oakeshott.
Bedsteads, metallic—433—J. Key and E. Hoskins.
Blinds, raising and lowering—415—J. O'Donnell and T. Arkill.
Boilers—385—W. E. Newton.
Bottles, &c., stoppers for—383—P. Graham.
Braces—429—J. Nixon.
Bricks, tiles, &c.—387—T. W. Walker.
Buttons, &c.—395—W. E. Newton.
Cotton, &c., doubling—177—J. Whiteley.
Drain pipes, &c., trapping and ventilating—404—J. Honeyman, jun.
Drill braces, &c.—406—J. C. Cole.
Engines, &c., locomotive—381—A. C. Sterry.
Envelopes—413—H. W. Hart.
Fabrics, finishing paper and textile—416—S. Read.
Fabrics, looped and textile—417—J. and J. Cash.
Fibrous materials, preparing—411—W. Tongue.
Fire-arms, breech-loading—2846—C. Avery.
Fire lighters—407—J. T. White.
Furnaces, burning combustible liquids in—393—H. Bunning, jun.
Gauges, steam—405—W. E. Newton.
Grain, drying—379—T. Scott.
Healds for weaving—435—W. Brooke and R. Edmondson.
Iron and steel—397—J. A. Jones.
Knitting machines—2877—J. H. Johnson.
Locks—422—W. R. Lake.
Looms, &c.—414—C. and C. H. Longbottom.
Lubricators—389—S. G. Taylor.
Matches—401—A. E. Borgen.
Paper, manufacturing—331—C. H. Roeckner.
Pipes, &c., rain-water—420—G. Tucker.
Ropes, &c., winding—391—F. Ardache.
Scaffolding, &c.—424—G. Harford.
Sewers, &c., constructing—426—T. Walker.
Sewing machines—408—G. F. Bradbury and T. Chadwick.
Shuttles—403—H. Brindle.
Smoke, &c., consuming—293—T. Hydes and J. Bennett.
Soap, cutting—399—C. W. Guttridge.
Steam, apparatus for condensing—402—W. J. M. Rankine and J. M. Gale.
Steel, &c., compressing, &c.—423—J. B. Wilson.
Steel, &c., powder for polishing—425—A. McKnight.
Thrashing machines, removing straw from—312—G. Thornton.
Valves, regulating—427—P. Rothwell.
Wood, &c., cutting—421—W. Drake.

PATENTS SEALED.

2413. J. McIntyre.
2414. J. L. Norton & G. Hawksley.
2421. E. A. Dana.
2422. J. Varley.
2425. A. and E. Wigzell.
2431. W. R. Lake.
2432. P. Kniaghininsky, P. Galahoff, and N. Ossipoff.
2434. W. Berry.
2436. E. Sonstadt.
2440. J. W. Webb.
2454. W. T. Watts and D. J. Fleetwood.
2468. A. McN. and M. A. Wier.
2476. J. A. Brown.
2477. W. J. Matthews.
2488. W. R. Pape.
2504. J. K. Smythies.
2553. J. Eichhorn.
2628. H. M. Mellor.
2685. A. Ziegele.
2686. H. Forbes.
2691. P. H. Colomb and F. J. Bolton.
2734. F. Meyer and W. Wainwright, jun.
3106. A. V. Newton.
3688. A. V. Newton.

From Commissioners of Patents' Journal, February 25.

PATENTS SEALED.

2435. W. C. Thurgar.
2450. W. Pedder.
2464. J. and R. D. Paulin.
2465. W. Muir.
2484. C. Gelstharp.
2486. H. Vallance.
2487. C. Tessier.
2494. E. Y. Robbins.
2496. E. T. Archer.
2522. F. Versmann.
2528. A. M. Clark.
2529. J. G. Tongue.
2547. W. R. Lake.
2548. C. E. Brooman.
2590. P. R. Couchoud.
2683. A. M. Clark.
2710. A. Taylor.
2739. J. H. Johnson.
2799. J. H. Johnson.
2973. W. Brookes.
3358. A. V. Newton.
3633. J. Davidson.
3662. W. E. Newton.
31. W. E. Newton.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

466. T. Ogden.
559. J. M. Hart.
481. R. Willison.
488. C. V. and A. O. Walker.
504. G. Sinclair.
548. M. B. Nairn.
522. J. Howard.
581. J. Park.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

500. W. Whalley.
518. C. Beslay.
516. J. Wilson.
484. J. Howard & E. T. Bousfield.
453. A. Barclay.
486. J. Young.